WHAT IS CLAIMED IS:

1. A contact sensitive device comprising:

a member capable of supporting bending waves;

a plurality of sensors mounted on the member for measuring bending wave vibration in the member, wherein each of the sensors determines a measured bending wave signal; and

a processor responsive to the measured bending wave signals to calculate a location of a contact on the member; the processor calculating a phase angle for each measured bending wave signal and a phase difference between the phase angles of least two pairs of sensors so that at least two phase differences are calculated from which the location of the contact is determined.

2. A contact sensitive device according to claim 1 comprising an absorber at edges of the member whereby reflected waves are suppressed.

3. A contact sensitive device according to claim 2, wherein mechanical impedance of the absorber and the member are selected so as to reduce reflections of bending waves from the edges of the member.

4. A contact sensitive device according to claim 3, wherein the impedances are selected so that bending wave energy is strongly absorbed in a frequency band around a chosen frequency ω_0.

5. A contact sensitive device according to claim 4, wherein the impedances are selected to satisfy the following equation:

$$Z_T = -i\,Z_B(\omega_0)$$

where Z_T is the termination impedance of the absorber and Z_B is the mechanical impedance of the edge of the member.

6. A contact sensitive device according to claim 4, comprising a band-pass filter for filtering each measured bending wave signal, the filter having a pass-band centered at the chosen frequency ω_0 and a bandwidth of $\Delta\omega$.

7. A contact sensitive device according to claim 6, wherein the bandwidth $\Delta\omega$ of the filter obeys the relationship:

$$\Delta\omega >> 2k(\omega_0)v_{max}$$

where v_{max} is the maximum lateral velocity of the contact.

8. A contact sensitive device according to claim 2 wherein the absorber is made from foamed plastics.

9. A contact sensitive device according to claim 1, wherein the member comprises a raised pattern on its surface whereby a contact drawn across the surface provides a force to the member to generate bending waves in the member.

10. A contact sensitive device according to claim 9, wherein the pattern is random whereby a contact traveling over the surface of the member generates a random bending wave signal.

11. A contact sensitive device according to claim 10, wherein the pattern is formed from an anti-reflective coating, an anti-glare surface finish, or an etched finish.

12. A contact sensitive device according to claim 1, further comprising at least two band-pass filters which have different pass-band frequencies and which simultaneously process the bending wave signals measured by a pair of sensors whereby a phase angle difference for each pass-band frequency is provided by the pair of sensors.

13. A contact sensitive device according to claim 1, comprising four sensors on the member.

14. A contact sensitive device according to claim 1 comprising three or more sensors on the member.

15. A contact sensitive device according to claim 1, comprising means for determining an initial location of the contact using a dispersion corrected correlation function of pairs of measured bending wave signals and means for determining subsequent locations of the contact using the phase angle difference between pairs of measured bending wave signals.

16. A contact sensitive device according to claim 1, wherein an initial location of the contact is determined using a dispersion corrected correlation function of pairs of measured bending wave signals and wherein subsequent locations of the contact are determined using a phase angle difference between pairs of measured bending wave signals.

17. A contact sensitive device according to claim 1, further comprising a phase detector for determining the phase angle.

18. A contact sensitive device according to claim 17, wherein the processor comprises a low-pass filter and a digitizer for determining the phase angles.

19. A contact sensitive device according to claim 1, wherein the member is an acoustic radiator and an emitting transducer is mounted to the member to excite bending wave vibration in the member to generate an acoustic output.

20. A contact sensitive device according to claim 19, comprising means for ensuring that the acoustic output and measured bending wave signals are in discrete frequency bands.

21. A contact sensitive device according to claim 19, further comprising one or more filters to separate the acoustic output from the measured bending wave signals.

22. A contact sensitive device according to claim 1, further comprising an emitting transducer mounted to the member to excite bending wave vibration in the member.

23. A contact sensitive device according to claim 22, wherein the emitting transducer also functions as one of the sensors.

24. A contact sensitive device according to claim 1 wherein the member is transparent.

25. A contact sensitive device according to claim 1 wherein the member is a liquid crystal display screen comprising liquid crystals utilized to excite or sense bending wave vibration in the member.

26. A method of determining information relating to a contact on a contact sensitive device comprising:

providing a member capable of supporting bending waves and a plurality of sensors mounted on the member for measuring bending wave vibration in the member;

applying a contact to the member at a location, using each of the sensors to determine a measured bending wave signal; and

calculating the location of a contact from the measured bending wave signals by calculating a phase angle for each measured bending wave signal, calculating a phase difference between the phase angles of at least two pairs of sensors and determining the location of the contact from the at least two calculated phase differences.

27. A method according to claim 26, wherein the plurality of sensors is three or more.

28. A method according to claim 26, comprising suppressing reflected waves by placing an absorber at the edges of the member.

29. A method according to claim 28, comprising selecting the mechanical impedances of the absorber and the member so as to reduce reflections of bending waves from the edges of the member.

30. A method according to claim 29, comprising selecting the impedances so that bending wave energy is strongly absorbed in a frequency band around a chosen frequency ω_o.

31. A method according to claim 30, comprising selecting the impedances to satisfy the following equation

$$Z_T = -i\, Z_B(\omega_0)$$

where Z_T is the impedance of the absorber and Z_B is the impedance of the edge of the member.

32. A method according to claim 30, comprising filtering each measured bending wave signal by a band-pass filter having a pass-band centered at the chosen frequency ω_o and a bandwidth of Δ_ω.

33. A method according to claim 26, comprising applying the phase difference equation:

$$\Delta\theta_{lm} = \theta_1 - \theta_m = k(\omega_0)\Delta x_{lm} + 2\pi n_{lm}$$

to determine the location of the contact, where θ_i is the phase angle of a measured bending wave signal, x_i is the distance from the contact location to each sensor, $\Delta x_{lm}=x_l-x_m$ is the path length difference of two sensors, $k(\omega)$ is the wavevector and n_{lm} is an unknown integer.

34. A method according to claim 33, comprising selecting the member to constrain the magnitude of Δx_{lm} to values less than one half of a wavelength so that n_{lm} is determined from $|\Delta\theta_{ml} - 2\pi n_{lm}| < \pi$.

35. A method according to claim 33, comprising determining an initial location of the contact using the dispersion corrected correlation function of a pair of

measured bending wave signals and selecting a value of n_{lm} which minimizes change in the path length difference.

36. A method according to claim 33, comprising selecting a series of values of n_{lm}, combining the series of values with each phase angle difference to define a series of path length differences, plotting the series of graphs of the path length differences, and inferring the true value of n_{lm} from a point at which a large number of the graphs intersect.

37. A method according to claim 26, comprising calculating multiple phase angle differences from the pairs of phase angles, plotting a graph of each path length difference and selecting a point at which a large number of the hyperbolae intersect to be the location of the contact.

38. A method according to claim 26, comprising dividing the measured bending wave signals from each sensor into at least two discrete frequency bands and calculating a phase angle difference for a pair of sensors for each frequency band.

39. A contact sensitive device comprising:

a member capable of supporting bending waves;

a plurality of sensors mounted on the member for measuring bending wave vibration in the member; and

means for calculating the location of a contact from the measured bending wave signal by calculating a phase angle for each measured bending wave signal, calculating a phase difference between the phase angles of at least two pairs of sensors and determining the location of the contact from the at least two calculated phase differences.